NSWER 7 OF 11 CAPLUS COPYRIGHT 2003 ACS on STN
AN 1998:629695 CAPLUS
DN 129:268945
TI Enhancement of sidewall polymer removal from semiconductor wafers by plasma ashing
IN Solis, Ramiro; Levan, Mark Arnold
PA VLSI Technology, Inc., USA
SO U.S., 9 pp.
CODEN: USXXAM
DT Patent
LA English
IC ICM C25F001-00
NCL 134001000
CC 76-3 (Electric Phenomena)
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI US 5814155	A	19980929	US 1996-672477	19960626
PRAI US 1996-672477		19960626		

AB O2 is introduced into an ashing environment at .apprx.800 SCCM; **CF4** is introduced into the ashing environment at .apprx.80 SCCM; H2O vapor is introduced into the ashing environment at .apprx.80 SCCM such that etching of oxide material is suppressed; and sidewall polymer material is selectively ashed. The ashing environment is used to selectively etch sidewall polymer material, thereby providing a method for removing sidewall polymer material without detrimentally etching other materials.
ST plasma ashing enhancement sidewall polymer semiconductor
IT Semiconductor materials
(enhancement of sidewall polymer removal from semiconductor wafers by plasma ashing)
IT Polymers, processes
RL: REM (Removal or disposal); PROC (Process)
(enhancement of sidewall polymer removal from semiconductor wafers by plasma ashing)
IT Semiconductor device fabrication
(plasma ashing for removal of sidewall polymers from semiconductor wafers in)
IT Ashing
(plasma; enhancement of sidewall polymer removal from semiconductor wafers by plasma ashing)
IT Etching
(selective; in plasma ashing for removal of sidewall polymers from semiconductor wafers)
IT 75-73-0, Carbon fluoride (**CF4**) 7782-44-7, Oxygen, processes
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(in plasma ashing for removal of sidewall polymers from semiconductor wafers)
IT 7732-18-5, **Water**, processes
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(vapor; in **plasma ashing** for removal of sidewall polymers from semiconductor wafers)
RE.CNT 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE
(1) Benzing; US 4786352 1988 CAPLUS
(2) Mattson; US 5198634 1993
(3) Mlynko; US 4853081 1989 CAPLUS
(4) Williams; US 5647953 1997 CAPLUS

ANSWER 9 OF 11 CAPLUS COPYRIGHT 2003 ACS on STN
AN 1991:257724 CAPLUS
DN 114:257724
TI Resist stripping in an oxygen + water plasma downstream
AU Fujimura, Shuzo; Shinagawa, Keisuke; Suzuki, Miki T.; Nakamura, Moritaka
CS Basic Process Dev. Div. 2-3, Fujitsu Ltd., Kawasaki, 211, Japan
SO Journal of Vacuum Science & Technology, B: Microelectronics and Nanometer Structures (1991), 9(2, Pt. 1), 357-61
CODEN: JVTBD9; ISSN: 0734-211X
DT Journal
LA English
CC 76-3 (Electric Phenomena)
Section cross-reference(s): 74
AB Characteristics are reported for a resist stripping process downstream of an oxygen plasma to which **water** vapor is added. The effects of additive **water** vapor are an increase in at. oxygen concn. in the plasma, a decrease in activation energy of ashing reaction, and protection of semiconductor devices from the sodium contamination from the resist. The at. oxygen concn. was approx. doubled by mixing 10% H2O into the oxygen plasma. The activation energy of the ashing reaction to the resist made from Novolak resin decreased from about 0.5 to 0.39 eV by the addn. of **water** vapor of more than 1%. The activation energy of hydrogen abstraction from hydrocarbon mols. by an OH radical was lower than that by a ground state oxygen atom [O(3P)], which was the dominant ashing species in the oxygen plasma downstream, and that by an at. hydrogen was higher than that by the ground state oxygen atom. Moreover, the activation energy in the downstream ashing of the oxygen plasma added to which was 1% **water** vapor was lower than that of the oxygen plasma to which 3% hydrogen was added, even though the relative concn. of at. hydrogen in each plasma was equal. Therefore the decrease in the activation energy was probably due to the OH radical generated in the plasma and the downstream. Sodium atoms in the resist were blocked from entering into the semiconductor devices in the stripping process by use of the O2 + H2O plasma downstream. Thus sodium was not removed and remained on the wafer surface after resist stripping. Also, by adding N2 or **CF4** to the O2 + H2O **plasma**, the **ashing** rate could be increased without losing the above characteristics.
ST semiconductor device resist stripping; oxygen water vapor plasma downstream stripping
IT Plasma, chemical and physical effects
(oxygen-water vapor, resist stripping by)
IT Semiconductor devices
(resist stripping in oxygen-water vapor plasma for)
IT Resists
Phenolic resins, uses and miscellaneous
RL: USES (Uses)
(stripping of, in oxygen-water vapor plasma)
IT 7440-23-5, Sodium, uses and miscellaneous
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(contamination with, of semiconductor devices, in resist stripping)
IT 7732-18-5, Water, vapor 7782-44-7, Oxygen, uses and miscellaneous
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(plasma contg., in resist stripping, for semiconductor devices)
IT 75-73-0, **Carbon tetrafluoride**
RL: USES (Uses)
(resist stripping in plasma contg.)
IT 1333-74-0, Hydrogen, uses and miscellaneous 7727-37-9, Nitrogen, uses and miscellaneous
RL: USES (Uses)
(stripping of resists in plasma contg. oxygen and water vapors and)

ANSWER 10 OF 11 CAPLUS COPYRIGHT 2003 ACS on STN
AN 1991:16019 CAPLUS
DN 114:16019
TI Methods of stripping organic material
IN Fujimura, Shuzo; Shinagawa, Keisuke; Hikazutani, Kenichi
PA Fujitsu Ltd., Japan
SO Eur. Pat. Appl., 14 pp.
CODEN: EPXXDW
DT Patent
LA English
IC ICM H01L021-311
ICS G03F007-36
CC 76-3 (Electric Phenomena)
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI EP 379301	A1	19900725	EP 1990-300282	19900110
EP 379301	B1	19951108		
R: DE, FR, GB				
JP 2890432	B2	19990517	JP 1989-3303	19890110
US 4983254	A	19910108	US 1990-460798	19900104
PRAI JP 1989-3303		19890110		

AB In a method of ashing an org. film on a supporting substrate, mounted in a working chamber, a gaseous mixt. contg. O and a halogen is subjected to an ionization process in a plasma chamber from which neutral active species of a resulting plasma can pass into the working chamber. Water vapor is introduced into the working chamber at a rate such that the working chamber receives .gtoreq.1 mol of water vapor for every 2 mol of free halogen atoms received therein from the plasma chamber, to prevent such free halogen atoms from contacting the org. film. Such a method may be used, e.g., to remove an org. resist from a semiconductor wafer during the fabrication of semiconductor devices, and can enable the resist to be removed at an acceptably high rate at a desirably low temp., without causing significant contamination or etching of the underlying wafer.
ST ashing org film semiconductor wafer
IT Films
(org., **plasma ashing** of, **water** vapor and halogens in)
IT Halogens
RL: USES (Uses)
(**plasma ashing** of org. films using **water** vapor and)
IT Semiconductor devices
(plasma ashing of org. resists on wafers for)
IT Ashing
(plasma, of org. films, water vapor and halogens in)
IT 7732-18-5
RL: TEM (Technical or engineered material use); USES (Uses)
(films, org., **plasma ashing** of, **water** vapor and halogens in)
IT 7732-18-5, **Water**, uses and miscellaneous
RL: USES (Uses)
(**plasma ashing** of org. films using halogens and)
IT 75-46-7, Trifluoromethane 75-63-8, Bromotrifluoromethane 75-71-8, Dichlorodifluoromethane 75-72-9, Chlorotrifluoromethane 75-73-0, **Carbon tetrafluoride** 76-15-3 76-16-4, Hexafluoroethane 1320-37-2, Dichlorotetrafluoroethane 2551-62-4, Sulfur hexafluoride 7782-41-4, Fluorine, uses and miscellaneous 7783-54-2, Nitrogen trifluoride 7790-91-2, Chlorine trifluoride 57034-81-8, Xenon fluoride
RL: USES (Uses)
(**plasma ashing** of org. films using **water** vapor and)

L3 ANSWER 11 OF 11 CAPLUS COPYRIGHT 2003 ACS on STN
AN 1990:190158 CAPLUS
DN 112:190158